

Q<sup>12</sup>  
concluded

addition, since the positional offset preventing means for the above corrugated plated-like damper member is simple in structure, it is possible to reduce an increase in the manufacture cost as much as possible. Furthermore, there is no positional offset, and there is no unduly strong external force. Thus, the durability of the corrugated plate-shaped damper member per se is enhanced and the necessity to exchange such part during overhaul is obviated.--

IN THE CLAIMS:

Kindly amend claims 1-6 as follows:

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SUB  
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1. (Amended) A magnetic bearing apparatus comprising: a rotor shaft; a radial magnetic bearing for supporting the rotor shaft in a radial direction; a thrust magnetic bearing for supporting the rotor shaft in an axial direction; a touchdown bearing surrounding a lower end portion of the rotor shaft; a retainer member for supporting the touchdown bearing; a corrugated plate-shaped damper disposed in an annular gap between the touchdown bearing and the retainer member; and positional offset preventing means for preventing a positional offset of the corrugated plate-shaped damper.

Q<sup>13</sup>  
Cont.

2. (Amended) A magnetic bearing apparatus according to claim 1; wherein the corrugated plate-shaped damper comprises a pair of corrugated plate-shaped damper members; and wherein the positional offset preventing means comprises a thin metal plate interposed between the pair of corrugated plate-shaped damper members.

3. (Amended) A magnetic bearing apparatus according to claim 1; wherein the corrugated plate-shaped damper comprises a pair of corrugated plate-shaped damper members; and wherein the positional offset preventing means comprises an annular convex portion formed in an inner circumferential surface of the retainer member for separating the pair of corrugated plate-shaped damper members.

4. (Amended) A magnetic bearing apparatus according to claim 1; wherein the positional offset preventing means comprises an annular concave portion formed in an inner circumferential surface of the retainer member for receiving the corrugated plate-shaped damper.

5. (Amended) A magnetic bearing apparatus according to claim 4; wherein a sum of a depth of the annular concave portion and a thickness of the corrugated plate-shaped damper is 0.8 to 1.3 times a width of the annular gap.

*Q 13*  
*crnell*

6. (Amended) A vacuum pump having a magnetic bearing apparatus according to claim 1.

Kindly add the following new claims 7-20:

*Q 14*

7. A magnetic bearing apparatus according to claim 2; wherein a sum of a thickness of the thin metal plate and a thickness of one of the corrugated plate-shaped damper members is 0.8 to 1.3 times a width of the annular gap.

8. A magnetic bearing apparatus according to claim 7; wherein each of the corrugated plate-shaped damper members comprises a corrugated strip of steel.

9. A magnetic bearing apparatus according to claim 3; wherein a sum of a height of the annular convex portion and a thickness of one of the corrugated plate-shaped damper members is 0.8 and 1.3 times of a width of the annular gap.

10. A magnetic bearing apparatus according to claim 9; wherein each of the corrugated plate-shaped damper members comprises a corrugated strip of steel.

11. A magnetic bearing apparatus according to claim 5; wherein the corrugated plate-shaped damper comprises a corrugated strip of steel.

Q<sup>14</sup> cont.

12. A magnetic bearing apparatus comprising: a rotor shaft; a radial magnetic bearing for supporting the rotor shaft in a radial direction; a thrust magnetic bearing for supporting the rotor shaft in an axial direction; a pair of roller bearings having inner and outer race members and disposed between the thrust magnetic bearing and a portion of the rotor shaft; a retainer member surrounding the pair of roller bearings and forming an annular gap between the outer race members and an inner circumferential surface of the retainer member; a pair of corrugated damper members disposed in the annular gap; and positional offset preventing means for preventing a positional offset of the corrugated damper members.

13. A magnetic bearing apparatus according to claim 12; wherein the positional offset preventing means comprises a strip of metal disposed between the corrugated damper members.

14. A magnetic bearing apparatus according to claim 13; wherein a sum of a thickness of the strip of metal and a thickness of one of the corrugated damper members is 0.8 to 1.3 times a width of the annular gap.

15. A magnetic bearing apparatus according to claim 12; wherein the positional offset preventing means comprises an annular portion extending from the inner circumferential surface of the retainer member.

Q14  
cont.

16. A magnetic bearing apparatus according to claim 15; wherein a sum of a thickness of the annular portion in the radial direction and a thickness of one of the corrugated damper members is 0.8 and 1.3 times of a width of the annular gap.

17. A magnetic bearing apparatus according to claim 15; wherein the annular portion extends into the annular gap and divides the annular gap into a pair of annular gap portions each receiving a respective one of the corrugated damper members.

18. A magnetic bearing apparatus comprising: a rotor shaft; a radial magnetic bearing for supporting the rotor shaft in a radial direction; a thrust magnetic bearing for supporting the rotor shaft in an axial direction; a pair of roller bearings having inner and outer race members and disposed between the thrust magnetic bearing and a portion of the rotor shaft; a retainer member surrounding the pair of roller bearings and forming an annular gap between the outer race members and an inner circumferential surface of the retainer member, the retainer member having an annular recess formed in the inner circumferential surface thereof and communicating with the annular gap; and a corrugated damper member disposed in the annular recess of the retaining member.

19. A magnetic bearing apparatus according to claim 18; wherein a sum of a depth of the annular recess of the retainer member and a thickness of the corrugated damper member is 0.8 to 1.3 times a width of the annular gap.

20. A magnetic bearing apparatus according to claim 18; wherein the corrugated damper member comprises a single strip of metal.

**IN THE ABSTRACT:**

Delete the abstract now of record and insert therefor the new abstract submitted herewith on a separate sheet.

**ADDITIONAL FEES:**

No additional fees are believed required; however, should it be determined that a fee is due, authorization is hereby given to charge any such fee to our Deposit Account No. 01-0268.

**IN THE DRAWINGS:**

Submitted herewith are copies of Figs. 4 and 5 on which have been marked in red proposed drawing revisions. Upon approval of the drawing revisions and allowance of the application, the formal drawings will be accordingly revised.